REMARKS

Claims 1-13 remain in the Application. Reconsideration of the pending claims is respectfully requested in view of the following remarks.

I. Claims Rejected Under 35 U.S.C. § 102

Claims 1-10 and 13 stand rejected under 35 U.S.C. § 102(b) as being anticipated by U.S. Patent No. 6,101,010 issued to Konishi ("Konishi"). Applicants respectfully traverse the rejection.

To anticipate a claim, the Examiner must show that a single reference teaches each of the elements of that claim. Claim 1 includes the elements of "a coupler that optically couples the optical monitoring signals to the optical signals including data to be transmitted" and "a fault determiner that receives information on settings of the optical switch .... and determines whether the optical switch malfunctions depending on whether the information coincides with the detected output power transitions of the split optical monitoring signals." Applicants submit that Konishi does not teach these elements.

Konishi discloses a technique in which a multiplexed WDM optical signal (including data) is amplitude-modulated by an external modulator 21 using a sine-wave electrical signal having a frequency of several kHz to several hundred kHz. Konishi refers to the sine-wave electrical signal as a monitoring signal. The monitoring signal is generated by a control circuit 23 and an oscillator 22 in a modulator part 2 connected to a transmitter 1. The multiplexed WDM optical signal is modulated by the monitoring signal and then output to an optical transmission line 7. The monitoring signal has a unique frequency for each specific transmitter. The WDM optical signal modulated by the monitoring signal passes through an optical matrix switch 3.

Konishi discloses a technique in which a portion of the optical signal supplied from the matrix switch 3 is extracted using optical splitters 411-413. The monitoring signal generated at the transmitter side is extracted from the optical signal by optical to electrical (O/E) converters 421- 423 and filters 431-433. Detectors 441-443 compare the levels of the monitoring signal with a threshold level and generate level-detecting signals. Based on the level-detecting signals and switching information from the transmitter side, an alarm processing circuit 46 determines whether the optical matrix switch 3 has operated normally or abnormally.

Konishi does not teach coupling the monitoring signal to the optical signal using an optical coupler, because a modulator is not a coupler. The claimed invention relates to a technique in which the monitoring signal is coupled to an optical signal by an optical coupler instead of modulating the optical signal by a modulator. A coupler, as commonly known in the art, combines or adds signals instead of modulating signals. Konishi's system requires a modulator. By contrast, the claimed invention uses a coupler. Thus, a modulating signal having a frequency of several kHz to several hundred kHz or other additional amplitude modulation in a transmitter is not necessary.

Moreover, the claimed invention extracts the modulating signal at the output of an optical switch to detect only an on-off variation of the modulating signal. The on-off variation is compared with the settings of the switch to determine whether the switch has operated normally or abnormally. Konishi does not disclose detect only an on-off variation of the modulating signal.

With respect to Claim 1, Claim 1 recites an apparatus in which an optical signal including data to be transmitted to an optical switch is coupled with a monitoring optical signal by a WDM optical coupler, just before the optical signal is input to the optical matrix switch. The monitoring signal has a different frequency than the optical signal. A splitter extracts the monitoring signal added to the optical signal at the output of the optical switch. Fault determination is based on the setting of the optical switch and the power transitions of the split monitoring signal, that is, an on-off variation of the monitoring signal. Examples of detecting an on-off variation of the monitoring signal are illustrated in Figures 2A and 2B of the specification. The detected on-off variation is compared with the switching information of the switch so as to determine whether the optical switch has malfunctioned. For example, when the state of the monitoring signal changes from an off state to an on state, a new light path is set in the optical switch. When the state of the monitoring signal changes from an on state to an off state, a light path is cancelled in the optical switch. Konishi does not disclose detecting the on-off variation of the modulating signal and comparing it with the settings of the optical switch. Thus, Konishi does not teach each of the elements of Claim 1.

Analogous discussions apply to independent Claim 6. Claims 2-5 and 7-8 depend from Claims 1 and 6, respectively, and incorporate the limitations thereof. Thus, for at least the reasons mentioned above in regard to Claims 1 and 6, Konishi does not teach each of the elements of these dependent claims.

With respect to independent Claim 9, Claim 9 recites a technique in which a portion of an optical signal including data is extracted at the output of an optical switch. The signal extraction is performed by a general optical splitter to detect an on-off variation of the extracted optical signal. Detecting the on-off variation of the monitoring signal has an advantage over detecting other forms of variations. When an optical detector has a significantly smaller bandwidth than a data transmission speed of an optical signal, the output of the optical detector cannot catch up with the speed at which real data varies. For example, when an optical signal has a data transmission rate of at least 155 Mbps but an optical detector has a bandwidth of about 100kHz, a change of real data to 0 or 1 cannot be detected by the optical detector. However, the detector is capable of detecting whether an optical signal passes due to setting of a new light path in the optical switch, or does not pass due to cancellation of a light path. Konishi does not disclose detecting the on-off variation of the modulating signal and comparing it with the settings of the optical switch. Thus, Konishi does not teach each of the elements of Claim 9.

In regard to Claims 10 and 13, these claims depend from Claim 9 and incorporate the limitations thereof. Thus, at least for the reasons mentioned above in regard to Claim 9, Konishi does not anticipate these dependent claims.

Accordingly, reconsideration and withdrawal of the § 102 rejection of Claims 1-10 and 13 are respectfully requested.

II. Claims Rejected Under 35 U.S.C. § 103(a)

Claims 11 and 12 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over U.S. Patent No. 6,101,010 issued to Konishi ("Konishi"). Applicants respectfully traverse the rejection.

To establish a *prima facie* case of obviousness, the relied upon references must teach or suggest every limitation of the claim such that the invention as a whole would have been obvious at the time the invention was made to one skilled in the art.

Claims 11 and 12 depend from Claim 9 and incorporate the limitations thereof. Thus, for at least the reasons mentioned above in regard to Claim 9, Konishi does not teach or suggest these dependent claims. Accordingly, reconsideration and withdrawal of the § 103 rejection of Claims 11 and 12 are requested.

CONCLUSION

In view of the foregoing, it is believed that all claims are now in condition for allowance and such action is earnestly solicited at the earliest possible date. If there are any additional fees due in connection with the filing of this response, please charge those fees to our Deposit Account No. 02-2666.

Respectfully submitted,

BLAKELY, SOKOLOFF, TAYLOR & ZAFMAN LLP

Dated: Nov. 8, 2006

Eric S. Hyman, Reg. No. 30,139

12400 Wilshire Blvd.
Seventh Floor
Los Angeles, California 90025
(310) 207-3800

CERTIFICATE OF MAILING:
I hereby certify that this correspondence is being deposited with the United States Postal Service as first class mail in an envelope addressed to: Mail Stop Amendment, Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.

Amber Saunders 11/8/06
Amber D. Saunders Date